

**PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

Safety and Enforcement Division  
Rail Transit and Crossings Branch  
Rail Crossings Engineering Section

RESOLUTION SX-108  
February 27, 2014

**RESOLUTION**

RESOLUTION SX-108 GRANTING AUTHORITY TO METRO GOLD LINE FOOTHILL EXTENSION CONSTRUCTION AUTHORITY, ON BEHALF OF LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY, TO DEVIATE FROM THE PROVISIONS OF SECTION 9.5 OF GENERAL ORDER 75-D BY MODIFYING AND ADDING SOUND DIRECTIONAL SHROUDS TO THE AUDIBLE COMPONENT OF THE GRADE CROSSING WARNING DEVICES AT FIVE AT-GRADE CROSSINGS OF THE METRO GOLD LINE FOOTHILL EXTENSION LIGHT RAIL LINE IN THE CITIES OF MONROVIA AND DUARTE, LOS ANGELES COUNTY.

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**SUMMARY**

By letter dated May 21, 2013, and pursuant to Section 13.1 of California Public Utilities Commission General Order 75-D, the Metro Gold Line Foothill Extension Construction Authority on behalf of the Los Angeles County Metropolitan Transportation Authority, requests authority to deviate from Section 9.5 of General Order 75-D, which requires railroad crossing warning devices to sound bells during operation. Metro Gold Line Foothill Extension Construction Authority proposes to shorten the bells sounding duration by silencing them when the warning device gate arms are in the horizontal position. The crossing device warning lights will continue to function throughout the entire warning operating cycle; however, the bells would silence once the gates are fully deployed and in the horizontal position. In addition, the Metro Gold Line Foothill Extension

Construction Authority proposes to install sound directional shrouds on each warning device that will focus the bell sound at the immediate crossing locations.

The exemptions will apply at five crossings along its Metro Gold Line Foothill Extension light rail transit project phase 2A alignment. Metro Gold Line Foothill Extension Construction Authority is requesting an exemption at the following highway-rail crossings:

1. Mayflower Avenue, Monrovia
2. Magnolia Avenue, Monrovia
3. California Avenue, Monrovia
4. Mountain Avenue, Monrovia and Duarte
5. Buena Vista Street, Duarte

## **BACKGROUND**

Phase 2A of the Metro Gold Line Foothill Extension Project (Foothill Line Extension) is an 11.5-mile light rail line extension that runs from Pasadena to Azusa, along an existing rail alignment acquired by Los Angeles County Metropolitan Transportation Authority (Metro). The Foothill Line Extension will consist of 41 grade crossings. 24 of the crossings are grade-separated crossings, while the remaining 17 are at-grade motor vehicle or pedestrian crossings.

Metro Gold Line Foothill Extension Construction Authority (Foothill Authority) is requesting the exemption at each of five motor vehicle crossings along the semi-exclusive right-of-way alignment, to mitigate the noise to adjacent residential neighborhoods. Single and multi-family residential areas are located in close proximity of the five two-track grade crossings. Metro plans to operate light rail vehicle (LRV) service 7 days a week, with LRVs ultimately operating on 5-minute headways during peak periods. Metro service currently begins at 4:00 AM and ends at 2:00 AM daily with extended hours on weekends.

## **DISCUSSION**

Community concerns regarding noise from the sounding of bells and other audible warning devices at grade crossings is not new. The issue has been

previously addressed by the Commission for several light rail agencies. The development and expansion of light rail transit systems has increased this concern and the Commission's Safety and Enforcement Division – Rail Crossings Engineering Section (RCES) is working with California's light rail transit agencies to address the concern without degrading safety at grade crossings.

### Continuous Sounding of Bells

Section 9.5 of Commission General Order 75-D states:

*"Audible Warning Devices. Bells or other audible warning devices shall be included in all automatic warning device assemblies (except as provided in Section 10) and shall be operated in conjunction with the flashing light signals. See American Railway Engineering and Maintenance of Way Association's Communications and Signals Manual of Recommended Practices for reference."*

The modification of the automatic crossing warning devices would allow for the bells to sound when triggered by the approaching LRV, while the gate arm is moving from the vertical to the horizontal position. The bells would then stop sounding once the gate arm reaches the down (horizontal) position. At that point, the absence of an audible alert from the crossing warning devices will be mitigated by the sounding of the LRV's onboard audible warning device in accordance with Commission regulations in General Order 143-B sections 3.04 and 7.09 and Metro's established rules and procedures.

Foothill Authority's request for this exemption is in accordance with guidelines found in industry standards promulgated by the Federal Highway Administration (FHWA) and the American Railway Engineering and Maintenance of Way Association (AREMA), and is therefore consistent with the provisions of Section 9.5 of General Order 75-D referencing that standard.

FHWA's Railroad-Highway Grade Crossing Handbook: Chapter IV(I) (9), page 110, states in part "When gates are used, the bell may be silenced when the gate arms descend to within 10 degrees of the horizontal position. Silencing the bell when the train reaches the crossing or when the gates are down may be desired to accommodate residents of suburban areas."

Furthermore, Part 3.1.15(E)(10) of the AREMA Communications and Signals Manual of Recommended Practices states: "Pedestrian bell or other audible warning device shall sound for the duration of the warning system activation, except when gates are being raised, unless otherwise determined by the Diagnostic Team or ordered by a public agency."

Metro has received deviations from this Commission requirement of General Order 75-D in the past for a number of their Gold Line crossings. Foothill Authority and Metro believe that the exemption sought at the five crossings, for silencing the bells when the gates reach the horizontal position, is a practical and reasonable approach for mitigating noise in these communities, and that safety will not be compromised if the exemption is granted.

#### Sound Directional Shroud

Foothill Authority proposes to install a sound directional shroud on the audible warning devices at each of the five crossings. The proposed sound directional shroud design is similar to that approved by the Commission for Metro's use on Phase 1 of the Gold Line through Decision 05-02-032, dated February 24, 2005.

The design authorized in Decision 05-02-032 was for a half-round directional shroud design attached to Western-Cullen-Hayes bells on the warning devices. The design was thoroughly tested by Metro and witnessed by Commission staff to meet audible operational requirements of AREMA, the premier national industry organization providing recommended practices pertaining to the design, construction and maintenance of railway infrastructure. Additionally, during field implementation and testing, the directional shrouds provided a noticeable reduction in bell noise at residences near at-grade crossings, while meeting the minimum AREMA sound level requirements of 75 dB(A) at the crossing approaches.

Part 3.2.61(D)(5) of the AREMA Communications and Signals Manual of Recommended Practices states: "For a Soft Tone bell: in the 180 degree horizontal plane, the maximum sound reading measured in decibels, in a Anechoic test chamber at a point 10 ft. from the face of the sound horn and in increments of 20 degrees, should not be more than 85 dB(A) and not less than 75 dB(A)."

Part 3.2.61(D)(2) of the AREMA Communications and Signals Manual of Recommended Practices also states: "Bell should operate between 100 and 325 impulses per minute."

Foothill Authority proposes to use the same directional shroud design with the Western-Cullen-Hayes model number 0777 electronic bell or approved equivalent, and meet the following requirements:

1. Conform to AREMA Signal Manual, Part 3.2.61(D)(5) and 3.2.61(D)(2);
2. Set the bell sound level to 76 dB(A) +/- 1 dB(A), as measured 10 feet from the face of the bell, unless ambient noise levels dictate otherwise; and
3. The ring rate shall not be less than 100 impulses per minute and no more than 150 impulses per minute.

RCES has reviewed and analyzed Foothill Authority's request. RCES recommends that the requested exemption from the requirements of GO 75-D be granted. RCES will coordinate with Foothill Authority for testing of the modified audible warning systems and confirm compliance with applicable AREMA sound level requirements.

## **NOTICE**

On January 29, 2014, 2013 the Expo Authority request was published in the Commission's Daily Calendar.

## **COMMENTS**

The draft Resolution of the Safety and Enforcement Division in this matter was mailed in accordance with Section 311 of the Public Utilities Code and Rule 14.2 (c) of the Commission's Rules of Practice and Procedure. No comments were received.

## **FINDINGS**

1. Foothill Authority requests authority for a deviation from the requirements of Commission General Order 75-D Section 9.5 to silence the crossing warning device bells after the gate arms reach a horizontal position, at five crossings of the Foothill Line Extension at Mayflower Avenue (CPUC No. 084P-18.01), Magnolia Avenue (CPUC No. 084P-18.27), California Avenue (CPUC No. 084P-

18.86), Mountain Avenue (CPUC No. 084P-19.36), and Buena Vista Street (CPUC No. 084P-19.86) in the Cities of Monrovia and Duarte, Los Angeles County.

2. Foothill Authority's request for this exemption is in accordance with guidelines found in industry standards promulgated by AREMA, and therefore consistent with the provisions of Section 9.5 of GO 75-D referencing that standard.
3. Foothill Authority also requests authority to install a sound directional shroud on the audible warning devices at each of the five crossings. Sound directional shrouds will focus the bell sound at the immediate crossing locations and mitigate noise to the surrounding communities.
4. Foothill Authority proposes to use the same directional shroud design with the Western-Cullen-Hayes model number 0777 electronic bell or approved equivalent, as was previously approved by the Commission for Metro's use on Phase 1 of the Gold Line through Decision 05-02-032, dated February 24, 2005.
5. Commission staff has reviewed Foothill Authority's proposal and finds that the request is a practical and reasonable approach for mitigating noise in the communities and safety will not be compromised.
6. Commission staff will coordinate with Foothill Authority for testing of the modified audible warning systems and confirm compliance with applicable AREMA sound level requirements.
7. Commission staff recommends that this resolution be adopted.

**THEREFORE, IT IS ORDERED THAT:**

1. Metro Gold Line Foothill Extension Construction Authority on behalf of the Los Angeles County Metropolitan Transportation Authority is authorized to deviate from Section 9.5 of General Order 75-D, by shortening the bell sound duration on its warning devices, by silencing the bells when the gate arms reach horizontal position, at five at-grade highway-rail crossings. The crossings are: Mayflower Avenue, identified as CPUC crossing No. 084P-18.01; Magnolia Avenue, identified as CPUC No. 084P-18.27; California Avenue, identified as CPUC No. 084P-18.86; Mountain Avenue, identified as CPUC No.

084P-19.36; and Buena Vista Street, identified as CPUC No. 084P-19.86 in the Cities of Monrovia and Duarte, Los Angeles County.

2. Metro Gold Line Foothill Extension Construction Authority is granted authority to install a sound directional shroud on the audible warning devices at each of the five crossings, similar in design to that previously approved by the California Public Utilities Commission for Los Angeles County Metropolitan Transportation Authority's use on Phase 1 of the Gold Line through Decision 05-02-032, dated February 24, 2005.

The following requirements shall apply to the modification of the automatic crossing warning devices at Mayflower Avenue, Magnolia Avenue, California Avenue, Mountain Avenue, and Buena Vista Street:

1. The automatic crossing warning devices shall continue to operate for a minimum of 20 seconds prior to the light rail vehicle reaching the crossing, and gate arms must be in the fully down (horizontal) position prior to the light rail vehicle's arrival at the crossing.
2. The warning device bells shall continue to sound until the gate arms reach the horizontal position.
3. Metro Gold Line Foothill Extension Construction Authority shall notify the Cities of Monrovia and Duarte, and the California Public Utilities Commission's Rail Crossings Engineering Section when the modifications to the automatic grade crossing warning devices are completed.
4. Metro Gold Line Foothill Extension Construction Authority shall coordinate with Rail Crossings Engineering Section for the testing of the audible warning devices and directional shrouds. Rail Crossings Engineering Section shall witness testing and assure compliance with applicable American Railway Engineering and Maintenance-of-Way Association sound level requirements.
5. The California Public Utilities Commission's Safety and Enforcement Division's Director is delegated the power to rescind the authority granted by this resolution under the following conditions:

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- a. If Safety and Enforcement Division determines that light rail vehicle involved collisions, or near collisions, at the crossing are caused as a result of the authority granted by this resolution.
- b. If Los Angeles County Metropolitan Transportation Authority modifies the number, type, and functionality of the California Public Utilities Commission standard warning devices at the crossings without prior California Public Utilities Commission approval.
- c. If the light rail vehicle operators do not sound an audible warning device when approaching the crossing, as required by Section 7.09 of GO 143-B

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This resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed, and adopted by the California Public Utilities Commission at its regularly scheduled meeting on February 27, 2014. The following Commissioners voted favorably thereon:

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PAUL CLANON  
Executive Director